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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,139	10/20/2006	Bernhard Geyer	13027.0072USWO	7736
23552 7590 10/09/2009 MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			EXAMINER DOUGHERTY, THOMAS M	
			ART UNIT 2837	PAPER NUMBER
			MAIL DATE 10/09/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/568,139

**Applicant(s)**

GEYER ET AL.

**Examiner**

Thomas M. Dougherty

**Art Unit**

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2009.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 1-14 is/are allowed.  
6) ☒ Claim(s) 15 and 16 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 09 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/5508)  
Paper No(s)/Mail Date 6/25/09  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the adder in figure 1 has three inputs, one of which is indefinite in source and intent, this is the input without the triangular arrow pointing to the adder. This input may be an enable signal, however this is not clear. Additionally, the spelling of figure in both figures is "Figur" which is not the English spelling. Please change the spelling. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 15 indicates that control signal generation circuitry includes not only an adder for the feedforward and feedback control signals but also a digital to analog converter(s). Thus three inputs are claimed going to the adder (8 in the applicant's figure 2). In the applicant's figure 1 however, there are three inputs

into the adder, however one line is not labeled and has no arrow component, and its source can only be conjectured. As best understood, two inputs are provided to the adder, each of these signals come from the feedforward and feedback control signals, after each of these is converted to analog via a digital-to-analog converter (9). Thus the description is indefinite. Claim 16 is dependent on claim 15.

***Allowable Subject Matter***

Claims 1-14 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art fails to show or fairly suggest a method for the precise dynamic digital control of especially piezoelectric actuators for micropositioning systems, comprising: a proportional integral derivative (PID) regulator, the method comprising: estimating future system behavior to minimize order deviations; behavior is estimated and obtaining current correction signals for the purpose of a feedforward correction; reducing latency times in the feedforward loop of a sampling system, by applying a signal of a command via a switch having a switchable bypass to a first high resolution digital/analog converter -with the high resolution digital/analog converter being operated at a sampling rate of the sampling system, a PID feedforward loop further leading to a second fast digital/analog converter which is controlled independently of the sampling system; and supplying output signals of the high resolution digital/analog converter and the fast digital/analog converter, which represent control voltages, in an added-up form to a piezoelectric actuator which together with a position sensor forms a controlled system.

Likewise, the prior art fails to show or fairly suggest a control circuit for outputting a control signal to an external system, said control circuit comprising: a feedback control path receiving a feedback signal from the external system and at least partially by digital signal processing generates a feedback control signal based on a control input signal and the feedback signal; a feed-forward control path, separate from the feedback control path, the feed-forward control path generating a feed-forward control signal based on the control input signal; and control signal generation circuitry generating the control signal based on the feedback control signal and the feed-forward control signal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 15 and 16 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Direct inquiry to Examiner Dougherty at (571) 272-2022.

/T. M. D./

/Thomas M. Dougherty/

tmd

Primary Examiner, Art Unit 2837

October 7, 2009